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EXAMINER	
DANIELS, ANTHONY J	

ART UNIT	PAPER NUMBER
2622	

DATE MAILED: 08/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/083,352	NAKAMURA, HIDEO	
	Examiner	Art Unit	
	Anthony J. Daniels	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 May 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *9-16* is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment, filed 5/22/2006, has been entered and made of record. Claims 1-16 are pending in the application.

2. The examiner would like to thank applicant for including the timing diagrams describing the Udagawa reference and the present application.

Response to Arguments

3. Applicant's arguments filed 5/22/2006 with regard to claim 1 and the Udagawa et al. reference have been fully considered but they are not persuasive.

Having examined the attached timing diagrams thoroughly, the examiner sees applicant's view on the differences between the Udagawa et al. reference and the present application. In particular, applying the V1 and V3 signals (both high voltages) transfers the charges (C1 and M1) from the pixel. These signals are then set to a low voltage. Conversely, the present application applies high voltages to the transfer gate to transfer Ro from the pixel. This high voltage signal (V3A) is then kept in a high state throughout the summation process. Applicant defines this period of time in the attached timing diagrams as the read-out state.

In the claim, however, the read-out state is defined as application of charge read-out voltages to corresponding specific charge read-out electrodes. The examiner submits that Udagawa et al. applies a high voltage and low voltage to the electrodes to during the read-out of M1. Thus, charge readout voltages (first high, then low) are applied to the corresponding charge

readout electrodes during the summation process. *The examiner would like to suggest an amendment to the claims that would help in amending over the Udagawa et al. reference. The Udagawa et al. reference teaches applying a high voltage to the transfer gate, lowering the voltage and then summation occurs. According to Figure 2 of the present application, the high voltage is applied throughout summation. In short, a high voltage is applied during summation in the present application. In Udagawa et al., a low voltage is applied during summation. Claim 1 does not specify whether the charge readout voltages applied are high or low.*

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1,3,4,7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Udagawa et al. (US # 5,880,781) in view of Kobayashi et al. (US # 6,750,911).

Claim 7 will be discussed first.

As to claim 7, Udagawa et al. teaches an image capturing apparatus (Figure 3, still video camera) including a solid-state image pickup device (Figure 3, CCD "3") and a driving circuit (Figure 3, CCD Driver "2") for driving said solid-state image pickup device (Col. 4, Lines 64-67), wherein: said solid-state image pickup device includes a plurality of pixels that are provided with a photoelectric converting means (Figure 1, Col. 4, Lines 30-35) and consist of pixels of a first color (Figure 1, cyan pixels "C") and a second color (Figure 1, magenta pixels "M")

arranged in a given pattern (Figure 1); said driving circuit includes: a plurality of first transfer paths (Figure 2B, Col. 4, Lines 30-36, "...VCCD.") for reading out and transferring signal charges of said pixels (Figure 2B, Col. 4, Lines 35,36), and a second transfer path (Figure 13E, HCCD; *{It is inherent in the system of Udagawa et al. that the second transfer path be included in the Figures 2A-D. Figure 13E is cited just to show applicant that a second transfer path does exist.}*) for reading out and transferring the signal charges transferred from said first transfer paths (Figure 13G; Col. 5, Lines 36-58); said driving circuit functions to: generate first summed charges (Figure 2D, C+M) by: reading out onto said first transfer paths a plurality of pixels that constitutes all or a part of the pixels of certain colors (Figure 2B, C1 and M1 are read out; Col. 2, Lines 62-67; Col. 3, Lines 1-17) by applying charge readout voltages to corresponding charge readout electrodes (Col. 4, Lines 36 and 37), while retaining the signal charges of specific pixels of those read in the previous step mentioned above by maintaining said specific pixels in the read-out state, where the charges are read out from pixels to the first transfer path (Figure 2D, M1 retained in the VCCD; *{The state of M1 is in a state where it has been read out of the pixel and is, when added, in the first transfer path (VCCD).}*), where the charge readout voltages are being to corresponding specific charge readout electrodes (Col. 4, Lines 36 and 37; *{See Response to Arguments section above.}*), transferring the other signal charges read in said previous step (Figure 2D, C1 is transferred down to be added to M1) and adding the transferred signal charges to the retained signal charges (Figure 2D, C+M); generate second summed charges (C+G) by: reading out to the first transfer paths a plurality of signal charges of the pixels of certain colors (Figure 2B, C3 and G3) in the state where said first summed charges are located apart from where said plurality of signal charges of the pixels of the second color are going to be

read (Figure 2D, C+M located apart from C+G), and summing up said signal charges of the pixels of the second certain colors on either one of the first transfer paths or the second transfer path, or both the first transfer paths and the second transfer path (Figure 2D, C+G is added on the first transfer path (VCCD)); and transfer said first summed charges and the second summed charges to the second transfer path (Figure 2D, C+M and C+G transferred down to the HCCD); and output the first summed charges and the second summed charges from the second transfer path (Figure 3, *{It is inherent in the system of Udagawa et al. that the added signal charges be transferred out of the HCCD to the S/H A/D block of Figure 3*). The claim differs from Udagawa et al. in that it requires that the reading out and summing of said certain colors be of a same first color and a same second color.

In the same field of endeavor, Kobayashi et al. teaches a CCD driving method and apparatus for reading out, transferring, and summing of signals of a same first and second color (Figure 6(A), R3 + R4, G3 + G4; Col. 6, Lines 18-35). In light of the teaching of Kobayashi et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the reading out, transferring, and summing of signals of a same first and second color in the system of Udagawa et al., because an artisan of ordinary skill would recognize that reading out and transferring the signals of a same first and second color to be summed would provide a filtering process to be performed within the CCD imager, thereby removing aliasing components. Accordingly, there is no necessity of newly providing a filter circuit to remove noise (see Kobayashi et al., Col. 1, Lines 58-63).

As to claim **1**, claim 1 is a method claim corresponding to the apparatus claim 7. Therefore, claim 1 is analyzed and rejected as previously discussed with respect to the apparatus claim 7.

As to claim **3**, Udagawa et al., as modified by Kobayashi et al., teaches a solid-state image pickup device driving method as claimed in claim 1, wherein: said second summation process is performed with a plurality of charges of pixels of the second color being read out to given locations on the second transfer path (see Udagawa et al., Figure 2D, Figure 13F; Kobayashi et al., Figure 6(A), *{It is inherent in the system of Udagawa et al., as modified by Kobayashi et al., that the summed charges R3 + R4, G3 + G4 will be transferred to given locations on the second transfer path (HCCD), as shown in the downward direction arrow of Figure 2D in Udagawa et al.}*).

As to claim **4**, Udagawa et al., as modified by Kobayashi et al., teaches a solid-state image pickup device driving method as claimed in claim 1, wherein: a charge coupled device (see Figure 1, Figure 2A; Col. 4, Lines 30-33) having charge readout electrodes (Figure 2A, Gates V1-V8) respectively corresponding to the pixels (see Figure 2A, V1, V2 belonging to C1, V3, V4 belonging to M1) is provided for the first transfer paths so that said readout and retention are performed by applying charge readout voltages to said charge readout electrodes (Col. 4, Lines 35-41; *{It is inherent in the system of Udagawa et al., as modified by Kobayashi et al., that voltages are applied to the gates (electrodes).}*).

5. Claims 5,6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Udagawa et al. (see Patent Number above) in view of Kobayashi et al. (see Patent Number above) and further in view of Hattori et al. (US # 20050012826).

As to claim **5**, Udagawa et al., as modified by Kobayashi et al., teaches a solid-state image pickup device driving method as claimed in 1, wherein the manner of driving the solid-state image pickup device can be switched to: a first driving mode provided to perform said first summation process, said second summation process, and said sum output process (see Udagawa et al., Col. 4, Lines 49-55). The claim differs from Udagawa et al., as modified by Kobayashi et al., in that it further requires that a second driving mode be provided to read out the charges of the respective pixels individually to the first transfer paths, individually transfer the read charges to the second transfer path, and output said charges from the second transfer path.

In the same field of endeavor, Hattori et al. teaches a driving method and apparatus for a CCD (Abstract) which can be switched between an all-pixel read mode where charges are read individually, and a thinned out read mode ([0134]). In light of the teaching of Hattori et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to include an all pixel read mode in the system of Udagawa et al., as modified by Kobayashi et al., because an artisan of ordinary skill in the art would recognize that all-pixel read out schemes allow for the capture of high resolution still images (Hattori et al., [0134], Lines 15-19).

As to claim **6**, Udagawa et al., as modified by Kobayashi et al. and Hattori et al., teaches a solid-state image pickup device driving method as claimed in claim 5; wherein: said first driving mode is the moving image mode for shooting a moving image, and said second driving mode is the still image mode for shooting a still image (see Hattori et al., [0134]).

6. Claims 2,8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Udagawa et al. (see Patent Number above) in view of Kobayashi et al. (see Patent Number above) and further in view of Yu (US # 6,034,366).

As to claim **2**, Udagawa et al., as modified by Kobayashi et al., teaches a solid-state image pickup device driving method as claimed in claim 1. The claim differs from Udagawa et al., as modified by Kobayashi et al., in that it further requires that said first and second summation processes are performed with charges that have been read out to the first transfer paths being transferred on the first transfer paths in the forward and reverse direction.

In the same field of endeavor, Yu teaches two horizontal transfer registers for transferring charges up as well as down (Figure 2A). In light of the teaching of Yu, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a second horizontal transfer register in the system of Udagawa et al., as modified by Kobayashi et al., because an artisan of ordinary skill in the art would recognize that such a supplemental register would allow for different color charges to split up if need be (see Yu, Abstract, Lines 10-13) and an increase in the speed of the CCD readout.

As to claim **8**, Udagawa et al., as modified by Kobayashi et al., teaches an image capturing apparatus as claimed in claim 7. The claim differs from Udagawa et al., as modified by Kobayashi et al., in that it requires that the image capturing apparatus is provided with a processing means that is capable of reversing the order of the first summed charges and the second summed charges output from the solid-state image pickup device.

In the same field of endeavor, Yu teaches two horizontal transfer registers for transferring charges up as well as down (Figure 2A). In light of the teaching of Yu, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a second horizontal transfer register in the system of Udagawa et al., as modified by Kobayashi et al., because an artisan of ordinary skill in the art would recognize that such a supplemental register would allow for different color charges to split up if need be (see Yu, Abstract, Lines 10-13) and an increase in the speed of the CCD readout.

Allowable Subject Matter

7. Claims 9-16 are allowed.

The following is an examiner's statement of reasons for allowance: As to claim **11**, the prior art of record fails to teach or fairly suggest an image capturing apparatus including a control means capable of switching modes between a omission readout mode, a same color summation readout mode and a mixed color summation mode during preliminary measurements, wherein the preliminary measurements are performed prior to a main shooting. Claims **9,10** and **12-16** are allowed due to their dependence on claim 11.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony J. Daniels whose telephone number is (571) 272-7362. The examiner can normally be reached on 8:00 A.M. - 5:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc-Yen Vu can be reached on (571) 272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AD
8/3/2006

NGOC-YEN VU
SUPERVISORY PATENT EXAMINER